ACCESS DB # 278396

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Scientific and Technical Information Center

SEARCH REQUEST FORM

Requester's Full Name: Courtney A. Brown Examiner # _____ Date: 11-18-2008

Art Unit: 1616 Phone Number: 0-3224 Serial Number: 10/508837

Location (Bldg/Room#): Rem 859 (Mailbox #): Rem 9C10 Results Format Preferred (circle): PAPER DISK (SCORE)

To ensure an efficient and quality search, please attach a copy of the cover sheet, claims, and abstract or fill out the following:

Title of Invention: Tryptophan Aminotransferase, indole-3-pyruvate decarboxylase, and indole-3-acetaldehyde oxidase as novel targets for herbicides

Inventors (please provide full names):

(see attached bib sheet)

Earliest Priority Date: 3/25/2002

Search Topic:

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known.

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent number(s) along with the appropriate serial number.*

Please search the enzymes tryptophan aminotransferase, indole-3-pyruvate decarboxylase, and indole-3-acetaldehyde oxidase using the attached EC numbers and recommended name synonyms. Please cross this search with the words herbicide and pesticide.

Thanks,
C. Brown

RUSH SEARCH

Accepted
Dave Hyun

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=> d ibib abs hitstr l9 1-1

L9   ANSWER 1 OF 1  HCAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:          2003:777995  HCAPLUS  Full-text
DOCUMENT NUMBER:           139:257707
TITLE:                     Tryptophan aminotransferase, indole-3-pyruvate
                           decarboxylase and indole-3-acetaldehyde oxidase as
                           novel targets for herbicides
INVENTOR(S):               Grossmann, Klaus; Schiffer, Helmut
                           ; Witschel, Matthias; Zagar, Cyrill
                           ; Rentzea, Costin; Menges, Markus
PATENT ASSIGNEE(S):        BASF Aktiengesellschaft, Germany
SOURCE:                    PCT Int. Appl., 37 pp.
                           CODEN: PIXXD2
DOCUMENT TYPE:             Patent
LANGUAGE:                  German
FAMILY ACC. NUM. COUNT:    1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.          DATE
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     WO 2003080859        A1    20031002    WO 2003-EP2846           20030319
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
             PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT,
             TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
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     DE 10213332          A1    20031009    DE 2002-10213332         20020325
     AU 2003214139        A1    20031008    AU 2003-214139           20030319
     EP 1490505           A1    20041229    EP 2003-709799           20030319
     EP 1490505           B1    20070530
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     JP 2005527201        T     20050915    JP 2003-578583           20030319
     AT 363542            T     20070615    AT 2003-709799           20030319
     EP 1798290           A1    20070620    EP 2007-104093           20030319
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             IT, LI, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR
     US 20050159312       A1    20050721    US 2005-508837           20050321
PRIORITY APPLN. INFO.:                      DE 2002-10213332    A    20020325
                                            EP 2003-709799      A3   20030319
                                            WO 2003-EP2846      W    20030319
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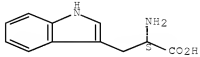
AB The invention relates to tryptophan aminotransferase, indole-3-pyruvate decarboxylase and indole-3-acetaldehyde oxidase as novel targets for herbicides. The invention also relates to test methods for identifying inhibitors of one or more of the aforementioned enzymes with a herbicidal action, to inhibitors with a herbicidal action that have been identified by the method and to methods for controlling undesired plant growth, based on the inventive inhibitors.

IT 73-22-3, L-Tryptophan, biological studies 87-51-4, Indole-3-acetic acid, biological studies 133-32-4, Indole-3-butyric acid 392-12-1, Indole-3-pyruvate 2591-98-2, Indole-3-acetaldehyde
RL: BSU (Biological study, unclassified); BIOL (Biological study)

(of plants, involvement in herbicide activity)
RN 73-22-3 HCAPLUS
CN L-Tryptophan (CA INDEX NAME)

Absolute stereochemistry.



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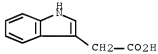
CN 1H-Indole-3-acetic acid (CA INDEX NAME)



RN 133-32-4 HCAPLUS
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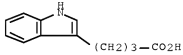

RN 392-12-1 HCAPLUS
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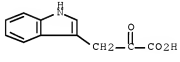
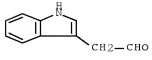


RN 2591-98-2 HCAPLUS
CN 1H-Indole-3-acetaldehyde (CA INDEX NAME)



IT 9022-98-4, Tryptophan aminotransferase 9074-92-4,

Indole-3-pyruvate decarboxylase 66982-22-2,
Indole-3-acetaldehyde oxidase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(tryptophan aminotransferase, indole-3-pyruvate decarboxylase and
indole-3-acetaldehyde oxidase as herbicide targets)
RN 9022-98-4 HCAPLUS
CN Aminotransferase, tryptophan (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 9074-92-4 HCAPLUS
CN Decarboxylase, indolepyruvate (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 66082-22-2 HCAPLUS
CN Oxidase, indoleacetaldehyde (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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RESULTS FROM SEARCHES IN REGISTRY, CAPLUS, AGRICOLA, BIOSIS, CABA, CROPB, CROPU,
AND ESBIOBASE

Search statement L24 has been saved, should additional citations be required.

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L14          16 SEA FILE=HCAPLUS ABB=ON  L13
L15           1 SEA FILE=REGISTRY ABB=ON  53-57-6/RN
L16       12664 SEA FILE=HCAPLUS ABB=ON  L15
L17           1 SEA FILE=REGISTRY ABB=ON  58-68-4/RN
L18       15228 SEA FILE=HCAPLUS ABB=ON  L17
L19           1 SEA FILE=REGISTRY ABB=ON  9074-92-4/RN
L20          45 SEA FILE=HCAPLUS ABB=ON  L19
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                ?OXIDASE?)
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                TROL?
L30          13 SEA FILE=HCAPLUS ABB=ON  L23 OR L25 OR L28 OR L29
L31          72 SEA L23
L32          66 DUP REMOV L31 (6 DUPLICATES REMOVED)
L33          21 SEA L32 AND (?ENZYME?(4A)(?BLOCK? OR ?ACTIV?) OR (?PLANT? OR
                ?VEGETAT?)(4A) ?CONTROL?)
L34          33 DUP REMOV L30 L33 (1 DUPLICATE REMOVED)


=> d ibib abs l34 1-33

L34  ANSWER 1 OF 33  HCAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:         2007:854435  HCAPLUS  Full-text
DOCUMENT NUMBER:          148:302139
TITLE:                    A medium-throughput screening assay to determine
                          catalytic activities of oxygen-consuming enzymes: a
                          new tool for functional characterization of cytochrome
                          P450 and other oxygenases
AUTHOR(S):                Olry, Alexandre; Schneider-Belhaddad, Florence;
                          Heintz, Dimitri; Werck-Reichhart, Daniele
CORPORATE SOURCE:         Department of Plant Metabolic Responses, Institute of
                          Plant Molecular Biology CNRS-UPR 2357, Universite de
                          Strasbourg, Strasbourg, 67000, Fr.
SOURCE:                   Plant Journal (2007), 51(2), 331-340
                          CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER:                Blackwell Publishing Ltd.
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
```

AB A challenge of the post-genomic era is to determine the functions of a plethora of orphan genes. This is a more acute problem when dealing with large gene families, such as the superfamily encoding cytochrome P 450 enzymes in higher plants. We propose here a new, simple, medium-throughput methodol. to screen for potential substrates of orphan P 450 mono-oxygenases. The same technique can also be applied to screening for inhibitors of the oxygenases involved in the biosynthesis of compds. essential for plant development, such as growth regulators. The method is based on a com. available microplate system, which detects the oxygen consumed by the catalytic reaction via an oxygen-sensing fluorophore. It is optimized using as a model CYP73A1, the cinnamic acid hydroxylase from Helianthus tuberosus, expressed in yeast. We show that the procedure is suitable not only for the detection and real-time monitoring, but also for the quant. evaluation of enzyme activity. This new method has broad application for the identification of candidate substrates and inhibitors in chemical libraries, to support determination of physiol. substrates, development of plant growth regulators, investigations on herbicide and pollutant metabolism, synthesis of valuable compds. and drug design. It also provides a fast-assay platform for determination of catalytic and inhibition parameters. The method applies to plant P 450 enzymes, but also to cytochromes P 450 from other organisms, and all types of oxygenases. The critical steps, calcn. of oxygen consumption from fluorescence signal, and limits of the methods are discussed.

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 2 OF 33 CABA COPYRIGHT 2008 CABI on STN

ACCESSION NUMBER: 2007:91771 CABA Full-text

DOCUMENT NUMBER: 20073076725

TITLE: Linked activation of cell division and oxidative stress defense in alfalfa leaf protoplast-derived cells is dependent on exogenous auxin

AUTHOR: Pasternak, T. P.; Otvos, K.; Domoki, M.; Feher, A.

CORPORATE SOURCE: Institute of Plant Biology, Biological Research Centre, Hungarian Academy of Sciences, Temesvari krt. 62., H-6726, Szeged, P.O. Box 521, H-6701 Szeged, Hungary. fehera@brc.hu

SOURCE: Plant Growth Regulation, (2007) Vol. 51, No. 2, pp. 109-117. 37 ref.
Publisher: Springer Science + Business Media. Dordrecht
ISSN: 0167-6903
URL: http://springerlink.metapress.com/link.asp?id=100329
DOI: 10.1007/s10725-006-9152-0

PUB. COUNTRY: Netherlands Antilles

DOCUMENT TYPE: Journal

LANGUAGE: English

ENTRY DATE: Entered STN: 4 May 2007
Last Updated on STN: 4 May 2007

AB The activation of cell division and oxidative stress responses has been investigated in the case of leaf protoplast-derived cells. Initiation of protoplast culture was found to be associated with oxidative stress as indicated by the rate of H2O2 release into the medium and/or by catalase and ascorbate peroxidase activities. Both cell division frequency and the above stress-related parameters were dependent on the exogenous auxin (2,4-dichlorophenoxyacetic acid, 2,4-D) concentrations used. In addition, the well known oxidative stress-inducing agent paraquat (1 [micro]M) could promote cell division at suboptimal auxin concentration but not in the absence of exogenous auxin. The H2O2 scavenger dimethylthiourea and the NADPH oxidase inhibitor diphenyleneiodonium inhibited not only the activation of cellular defence

reactions but cell division as well. Based on the above experimental observations, it is suggested that exogenous auxin (2,4-D) enhances cellular defence reactions in parallel with cell division activation.

L34 ANSWER 3 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 2005:185972 CABA Full-text
DOCUMENT NUMBER: 20053181754
TITLE: Expression of cinnamyl alcohol dehydrogenase gene in response to stresses and phytohormones in Rehmannia glutinosa
AUTHOR: Moon YuRan; Park MyoungRyoul; Hyun DongYun; Chun JaeChul; Reyes, B. G. de los; Yun SongJoong; Moon, Y. R.; Park, M. R.; Hyun, D. Y.; Chun, J. C.; de los Reyes, B. G.; Yun, S. J.
CORPORATE SOURCE: Division of Biological Resources Science, Institute of Agricultural Science and Technology, Chonbuk National University, Jeonju 561-756, Korea Republic. sjyun@chonbuk.ac.kr
SOURCE: Korean Journal of Breeding, (2005) Vol. 37, No. 3, pp. 138-146. 38 ref.
Publisher: Korean Breeding Society. Suwon
ISSN: 0250-3360
URL: aginfo.snu.ac.kr/breeding
PUB. COUNTRY: KOREA REPUBLIC
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 2 Dec 2005
Last Updated on STN: 2 Dec 2005

AB Cinnamyl alcohol dehydrogenase (CAD) catalyzes the reduction of hydroxycinnamyl aldehydes to the corresponding alcohols in the presence of NADPH. The objective of this study was to isolate CAD cDNA and characterize the expression of CAD gene to understand regulation of the first step of lignin biosynthesis in R. glutinosa. A full-length putative CAD clone was isolated from the leaf cDNA library of R. glutinosa using an expressed sequence tag clone as a probe. The clone was 1242 bp in length, and contained an open reading frame (ORF) and 5[prime]- and 3[prime]-non-coding regions. The ORF encodes a polypeptide of 323 amino acid residues with a calculated molecular mass of 35,640 D. The deduced amino acid sequence of the clone showed the highest sequence similarity of 73% with apple CAD and the clone was designated as RgCAD1. The two to three major bands with the four to five minor ones on the Southern blots indicate that RgCAD1 is a member of a small multi-gene family. RgCAD1 mRNA was expressed in the leaf, flower and root, and the levels of expression were higher in the leaf and flower than in the root. The expression of RgCAD1 mRNA was reduced by paraquat and ethylene but increased by UV and jasmonic acid. The levels of CAD activity correlated differently with those of RgCAD1 mRNA in response to the stresses and hormones, indicating that the regulation of RgCAD1 expression is controlled at the transcription and translation levels. The RgCAD1 sequence and information of its regulation could be valuable in investigating the lignin biosynthesis and the possible role of the phenylpropanoid intermediates in the paraquat tolerance of R. glutinosa.

L34 ANSWER 4 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 2006:43575 CABA Full-text
DOCUMENT NUMBER: 20063010408
TITLE: Abscisic acid-induced apoplastic H2O2 accumulation up-regulates the activities of chloroplastic and cytosolic antioxidant enzymes in maize leaves

AUTHOR: Hu XiuLi; Jiang MingYi; Zhang AYing; Lu Jun; Hu, X. L.; Jiang, M. Y.; Zhang, A. Y.; Lu, J.
CORPORATE SOURCE: College of Life Sciences, Nanjing Agricultural University, Nanjing, China. myjiang@njau.edu.cn
SOURCE: Planta, (2005) Vol. 223, No. 1, pp. 57-68. 43 ref. Publisher: Springer-Verlag GmbH. Berlin ISSN: 0032-0935 URL: http://www.springerlink.com/link.asp?id=100484
PUB. COUNTRY: Germany, Federal Republic of
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 2 Mar 2006 Last Updated on STN: 2 Mar 2006

AB The histochemical and cytochemical localization of abscisic acid (ABA)-induced H2O2 production in leaves of maize (Zea mays L.) plants were examined, using 3,3-diaminobenzidine (DAB) and CeCl3 staining, respectively, and the relationship between ABA-induced H2O2 production and ABA-induced subcellular activities of antioxidant enzymes was studied. H2O2 generated in response to ABA treatment was detected within 0.5 h in major veins of the leaves and maximized at about 2-4 h. In mesophyll and bundle sheath cells, ABA-induced H2O2 accumulation was observed only in apoplast, and the greatest accumulation occurred in the walls of mesophyll cells facing large intercellular spaces. Meanwhile, ABA treatment led to a significant increase in the activities of the leaf chloroplastic and cytosolic antioxidant enzymes superoxide dismutase (SOD), ascorbate peroxidase (APX) and glutathione reductase (GR), and pretreatment with the NADPH oxidase inhibitor diphenyleneiodonium (DPI), the O2- scavenger Tiron and the H2O2 scavenger dimethylthiourea (DMTU) almost completely arrested the increase in the activities of these antioxidant enzymes. Our results indicate that the accumulation of apoplastic H2O2 is involved in the induction of the chloroplastic and cytosolic antioxidant enzymes. Moreover, an oxidative stress induced by paraquat (PQ), which generates O2- and then H2O2 in chloroplasts, also up-regulated the activities of the chloroplastic and cytosolic antioxidant enzymes, and the up-regulation was blocked by the pretreatment with Tiron and DMTU. These data suggest that H2O2 produced at a specific cellular site could coordinate the activities of antioxidant enzymes in different subcellular compartments.

L34 ANSWER 5 OF 33 Elsevier BIOBASE COPYRIGHT 2008 Elsevier Science B.V. on STN
ACCESSION NUMBER: 2004284222 ESBIOBASE Full-text
TITLE: Do polyamines modulate the Lotus glaber NADPH oxidation activity induced by the herbicide methyl viologen?
AUTHOR: Cuevas J.C.; Sanchez D.H.; Marina M.; Ruiz O.A.
CORPORATE SOURCE: O.A. Ruiz, Unidad de Biotecnologia 1, Inst. Tecn. de Chascomus, Univ. Nac. Gen. S. Martin-Consejo N., Camino c. laguna, Km. 6 CC164, Pcia. de Buenos Aires, Argentina. E-mail: ruiz@intech.gov.ar
SOURCE: Functional Plant Biology, (2004), 31/9 (921-928), 43 reference(s) CODEN: FPBUCP ISSN: 1445-4408
DOCUMENT TYPE: Journal; Article
COUNTRY: Australia
LANGUAGE: English
SUMMARY LANGUAGE: English

AB In recent years, there has been a growing interest in NADPH oxidases which are involved in the active generation of reactive oxygen species (ROS), owing to their role in oxidative burst, signalling and oxidative damage derived

from biotic and abiotic stresses. NADPH oxidase activity is enhanced by some environmental cues, such as zinc deficiency and chilling stress, where zinc and polyamines have been suggested to be involved in the modulation of ROS generation. In order to further characterise NADPH oxidation activity during oxidative stress we exposed Lotus glaber Mill. (narrow-leaf trefoil; syn. L. tenuis Waldst. et Kit. ex Wild var. Miller) plants to the herbicide methyl viologen (MV) and evaluated zinc and polyamines as oxidative stress regulatory compounds. For this purpose we conducted in vitro and in vivo experiments, observing that zinc and the higher polyamines spermidine and spermine inhibited the NADPH oxidation activity in vitro while preventing methyl viologen-induced superoxide production in vivo. It is suggested that these substances act through a direct effect on flavin oxidases. However, it was not possible to correlate free polyamine content of L. glaber with their hypothetical inhibitory role during oxidative stress, probably owing to the plant's natural tolerance to the herbicide tested. Therefore, tobacco, a more sensitive species, was tested for methyl viologen toxicity. High concentrations of methyl viologen induced free polyamine levels in crude extracts and intercellular fluids. However, only free polyamine content in the intercellular fluids was increased in plants treated with low methyl viologen concentrations. These results support the notion that polyamine metabolism in the apoplast is involved in the physiological response to oxidative stress.

L34 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:676162 HCAPLUS Full-text
DOCUMENT NUMBER: 137:212855
TITLE: Three-components of dicamba O-demethylase from Pseudomonas maltophilia DI-6, cloning and use in making dicamba-tolerant transgenic plants and weed control
INVENTOR(S): Weeks, Donald P.; Wang, Xiao-Zhuo; Herman, Patricia L.
PATENT ASSIGNEE(S): Board of Regents of the University of Nebraska, USA
SOURCE: PCT Int. Appl., 86 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002068607	A2	20020906	WO 2002-US6310	20020228 <--
WO 2002068607	A3	20030220		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
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US 7022896	B1	20060404	US 1998-55145	19980403 <--
US 20060168700	A1	20060727	US 2001-797238	20010228 <--
US 7105724	B2	20060912		
CA 2439179	A1	20020906	CA 2002-2439179	20020228 <--
AU 2002252165	A1	20020912	AU 2002-252165	20020228 <--
AU 2002252165	B2	20080605		
HU 2003003214	A2	20031229	HU 2003-3214	20020228 <--

EP 1379539	A2	20040114	EP 2002-721224		20020228 <--
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JP 2005506043	T	20050303	JP 2002-568703		20020228 <--
NZ 528010	A	20051125	NZ 2002-528010		20020228 <--
RU 2292348	C2	20070127	RU 2003-128987		20020228 <--
NO 2003003811	A	20031015	NO 2003-3811		20030827 <--
MX 2003PA07770	A	20041112	MX 2003-PA7770		20030828 <--
PRIORITY APPLN. INFO.:			US 1997-42666P	P	19970404 <--
			US 1997-42941P	P	19970404 <--
			US 1998-55145	A2	19980403 <--
			US 2001-797238	A2	20010228 <--
			WO 2002-US6310	W	20020228 <--

AB The present invention relates to transgenic organisms that are able to degrade the herbicide dicamba, including transgenic plants that have been made tolerant to dicamba. The invention also relates to dicamba-degrading enzymes and to DNA mols. and DNA constructs encoding dicamba-degrading enzymes. The invention further relates to a method of controlling weeds in fields of dicamba-tolerant transgenic plants and to a method of removing dicamba from materials contaminated with it (bioremediation). Finally, the invention relates to methods of selecting transformants based on dicamba tolerance or on detecting the fluorescence of 3,6-dichlorosalicylic acid which is generated as a result of dicamba degradation The invention provides an isolated and at least partially purified dicamba-degrading O-demethylase, dicamba-degrading oxygenase, dicamba-degrading ferredoxin, dicamba-degrading reductase, and DNA sequences encoding them. The invention further provides any of the above-identified DNA constructs which also comprise a DNA sequence encoding a transit peptide that targets the dicamba-degrading enzyme (s) to organelles of a plant cell or microorganism (chloroplast and/or mitochondria). An enzyme activity which converts dicamba (2-methoxy-3,6-dichlorobenzoic acid) to 3,6-dichlorosalicylic acid in vitro has been detected in cell lysates of Pseudomonas maltophilia DI-6. Phenyl-Sepharose column chromatog. of a partially purified lysate resulted in the separation of this enzyme into three sep. protein components tentatively identified as an oxygenase, a ferredoxin, and a reductase. The activity of dicamba O-demethylase was dependent on oxygen and required NADH and Mg2+. Identification and sequencing of clones coding for the three components of dicamba O-demethylase of Pseudomonas maltophilia DI-6 is described.

L34 ANSWER 7 OF 33 CABA COPYRIGHT 2008 CABI on STN

ACCESSION NUMBER:	2002:41466 CABA Full-text
DOCUMENT NUMBER:	20013141532
TITLE:	Metabolism of diafenthiuron by microsomal oxidation: procide activation and inactivation as mechanisms contributing to selectivity
AUTHOR:	Kayser, H.; Eilinger, P.
CORPORATE SOURCE:	Syngenta Crop Protection AG, Research Biochemistry, WRO-1060.4.04, CH-4002 Basel, Switzerland.
SOURCE:	Pest Management Science, (2001) Vol. 57, No. 10, pp. 975-980. 24 ref. Publisher: John Wiley & Sons. Chichester Price: Journal article; Conference paper Meeting Info.: Paper presented at Insect Toxicology 2000, Berkeley, California, USA, 17-19 July, 2000. ISSN: 1526-498X
PUB. COUNTRY:	United Kingdom
DOCUMENT TYPE:	Journal
LANGUAGE:	English
ENTRY DATE:	Entered STN: 8 Mar 2002

Last Updated on STN: 8 Mar 2002

AB The thiourea insecticide/acaricide diafenthiuron represents a biologically inactive propesticide that requires transformation into the active carbodiimide derivative. The carbodiimide inhibits mitochondrial respiration by selective and covalent binding to the proteolipid (8 kDa) of Fo-ATPase [adenosinetriphosphatase] in the inner membrane and to porin (30 kDa) in the outer membrane. The thiourea can be activated by light as well as by cytochrome P-450 in the insect. To get insight into the enzymatic mechanisms of activation, model in vitro studies were performed using [14C]diafentriuron and microsomes from various vertebrate livers and from locust (Locusta migratoria) Malpighian tubules. Though there was a common set of metabolites, their quantities varied significantly with the species and assay conditions. As a typical product, p-hydroxydiafenthiuron was identified in assays with rat and mouse microsomes. The sulfomonoxide predominated in hen and fish assays, whereas pig and bovine microsomes almost exclusively produced the carbodiimide. The sulfoxide was shown to be a precursor of the carbodiimide. Formation of all metabolites was dependent on the presence of NADPH and active microsomes. The effects of inhibitors and the requirement for NAPDH suggested a role of cytochrome P-450-dependent monooxygenases in the formation of both the hydroxylated product and the carbodiimide. FAD-dependent monooxyganases (FMOs) may also be involved in a step following sulfoxidation. These in vitro studies revealed potential mechanisms contributing to biological selectivity of the effects of a pesticide that acts in a non-selective mode at a conserved mitochondrial site.

L34 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:	2000:578410 HCAPLUS Full-text
DOCUMENT NUMBER:	133:249745
TITLE:	Expression of the bacterial gdhA gene encoding a NADPH glutamate dehydrogenase in tobacco affects plant growth and development
AUTHOR(S):	Ameziane, Rafiqa; Bernhard, Karen; Lightfoot, David
CORPORATE SOURCE:	The Department of Plant and Soil Science, Molecular Science Program, Southern Illinois University, Carbondale, IL, 62901-4415, USA
SOURCE:	Plant and Soil (2000), 221(1), 47-57 CODEN: PLSOA2; ISSN: 0032-079X
PUBLISHER:	Kluwer Academic Publishers
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB The effects of genetic modification of nitrogen metabolism via the bacterial glutamate dehydrogenase (GDH) on plant growth and metabolism were investigated. The gdhA gene from Escherichia coli encoding a NADPH-GDH was expressed in tobacco plants under the control of the 35 S promoter. The specific activity of GDH in gdhA plants was 8-fold of that in E. coli. Damage caused by spray application of 1.35 mM of phosphinothricin (PPT) herbicide, a glutamine synthetase (GS) inhibitor, was less pronounced in gdhA plants as compared with the control plants which suggests that the introduced GDH can assimilate some of the excess ammonium, at least during GS inhibition. However, gdhA plants were susceptible to 2.7 mM PPT. Biomass production was consistently increased in gdhA transgenic plants grown under controlled conditions and in the field. Total free amino acids and total carbohydrates were increased in gdhA plants grown in the greenhouse suggesting that both nitrogen and carbon metabolism were altered. It is concluded that the modifications in transgenic plants may result from both increased nitrogen efficiency and altered gene expression and metabolism

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1999:356451 HCAPLUS Full-text
DOCUMENT NUMBER: 131:40913
TITLE: Herbicide metabolism and cross-tolerance in transgenic potato plants expressing human CYP1A1
AUTHOR(S): Inui, Hideyuki; Ueyama, Yukiko; Shiota, Noriaki; Ohkawa, Yasunobu; Ohkawa, Hideo
CORPORATE SOURCE: Department of Biological and Environmental Science, Faculty of Agriculture, Kobe University, Nada-ku, 657-8501, Japan
SOURCE: Pesticide Biochemistry and Physiology (1999), 64(1), 33-46
CODEN: PCBPBS; ISSN: 0048-3575
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Transgenic potato plants expressing human CYP1A1 and human CYP1A1/yeast NADPH-cytochrome P 450 reductase (YR) fused enzyme were generated from microtubers using the Agrobacterium transformation system. The transgenic plants S1384, expressing human CYP1A1 and both F1386 and F1515 expressing the fused enzyme were selected by kanamycin resistance, PCR anal., chlortoluron (CT) resistance, and Western blot anal. The integration and transcription of the corresponding CYP1A1 genes were confirmed in these selected transgenic plants by Southern and Northern blot analyses. CYP1A1 and its fused proteins were found to be produced in the transgenic plants S1384 and F1515, resp. The P 450-dependent monooxygenase activity of the transgenic plants S1384, S1386, and F1515 was 3.5, 4.2, and 3.8 times higher in 7-ethoxycoumarin O-deethylation in vitro and 6.4, 5.8, and 5.3 times higher in [14C]CT metabolism in vivo, than those of the control plants, resp. In the metabolism of [14C]atrazine (AT), four metabolites were found in both control and transgenic plants. The deisopropylated deethylated metabolite DIDE, which is nonphytotoxic, was produced to a higher extent in S1384 and F1515 compared with the control. With herbicide tolerance tests, S1384 showed tolerance toward both AT and pyriminobac-Me (PM), and F1386 and F1515 were tolerant toward PM, while the control died by treatment with both herbicides. Thus, the transgenic potato expressing human CYP1A1 metabolized the herbicides CT and AT with different structures and herbicide modes of action and resulted in cross-tolerance to both herbicides as well as PM. (c) 1999 Academic Press.
REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 10 OF 33 Elsevier BIOBASE COPYRIGHT 2008 Elsevier Science B.V. on STN
ACCESSION NUMBER: 1999238527 ESBIOBASE Full-text
TITLE: Use of dipyridyl-dithio substrates to measure directly the protein disulfide-thiol interchange activity of the auxin stimulated NADH: Protein disulfide reductase (NADH oxidase) of soybean plasma membranes
AUTHOR: Morre D.J.; Gomez-Rey M.L.; Schramke C.; Em O.; Lawler J.; Hobeck J.; Morre D.M.
CORPORATE SOURCE: D.J. Morre, Dept. Medicin. Chem. Mol. Pharmacol., HANS Life Sciences Research Building, Purdue University, West Lafayette, IN 47907-1333, United States.
SOURCE: Molecular and Cellular Biochemistry, (1999), 200/1-2 (7-13), 19 reference(s)
CODEN: MCBIB8 ISSN: 0300-8177
DOCUMENT TYPE: Journal; Article
COUNTRY: Netherlands
LANGUAGE: English

SUMMARY LANGUAGE: English

AB Dipyridyl-dithio substrates were cleaved by isolated vesicles of plasma membranes prepared from etiolated hypocotyls of soybean. The cleavage was stimulated by auxins at physiological concentrations. The substrates utilized were principally 2,2'-dithiodipyridine (DTP) and 6,6'-dithiodinicotinic acid (DTNA). The DTP generated 2 moles of 2-pyridinethione whereas the 6,6'-dithiodinicotinic acid generated 2 moles of 6-nicotinylthionine. Both products absorbed at 340 nm. The auxin herbicide, 2,4-dichlorophenoxyacetic acid (2,4-D) stimulated the activity approximately 2-fold to a maximum at about 10 μM. Concentrations of 2,4-D greater than 100 μM inhibited the activity. Indole-3-acetic acid stimulated the activity as well. The growth-inactive auxin, 2,3-dichlorophenoxyacetic acid (2,3-D), was without effect. DTNA cleavage correlated with oxidation of NADH and reduction of protein disulfide bonds reported earlier in terms of location at the external plasma membrane surface, absolute specific activity, pH dependence and auxin specificity. The dipyridyl-dithio substrates provide, for the first time, a direct measure of the disulfide-thiol interchange activity of the protein previously measured only indirectly as an auxin-dependent ability of isolated plasma membrane vesicles to restore activity to scrambled and inactive RNase.

L34 ANSWER 11 OF 33 CROPU COPYRIGHT 2008 THOMSON REUTERS on STN

ACCESSION NUMBER: 1998-85538 CROPU H A Full-text

TITLE: Interaction of 2-(4-methylphenoxy)triethylamine and related compounds with its herbicide target in the carotenoid biosynthetic pathway.

AUTHOR: Schnurr G; Boeger P; Sandmann G

CORPORATE SOURCE: Univ.Constance; Univ.J.W.Goethe-Inst.Bot.

LOCATION: Constance; Frankfurt, Ger.

SOURCE: J.Pestic.Sci. (23, No. 2, 113-16, 1998) 4 Fig.27 Ref. CODEN: NNGADV

AVAIL. OF DOC.: Lehrstuhl fuer Physiologie und Biochemie der Pflanzen, Universitaet Konstanz, P.O. Box 5560, D-78457 Konstanz, Germany. (P.B.).

DOCUMENT TYPE: Journal

LANGUAGE: English

FIELD AVAIL.: AB; LA; CT

AN 1998-85538 CROPU H A Full-text

AB The response of purified Erwinia uredovora lycopene cyclase to several potential inhibitors was determined and enzyme kinetics measurements under inhibition conditions were carried out. Sulfuryl reagents and arginine-modifying compounds did not affect enzyme activity. However, p-diethylaminoethyl-tolyl ether (MPTA), AMO-1618 (carvadan) and nicotine were effective inhibitors. I50 values for MPTA and nicotine were 12 and 4.8 uM, respectively. Kinetic behavior implied a non-competitive interaction of MPTA with the E. uredovora lycopene cyclase with respect to the substrate lycopene and also to the cofactor NADH. Except for the sensitivity against sulfuryl reagents, the results on inhibition properties of the E. uredovora lycopene cyclase resemble qualitatively and quantitatively those of the cyanobacterial and higher plant enzyme.

ABEX Although the enzyme characterized in this publication is of bacterial origin, inhibition properties closely resemble the higher plant lycopene beta-cyclase. Accordingly, the lycopene cyclase from Erwinia can be used as a convenient in-vitro system to assay inhibitors with herbicidal potential and to determine their I50 values for interaction at the level of lycopene cyclase.

L34 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:125273 HCAPLUS Full-text

DOCUMENT NUMBER: 128:177175

ORIGINAL REFERENCE NO.: 128:34855a
TITLE: Current insecticides and their perspectives for the future
AUTHOR(S): Wood, Edgardo J.
CORPORATE SOURCE: CIPEIN (CITEFA-CONICET), Catedra Toxicologia Quimica Legal, FCEN-UBA, Argent.
SOURCE: Acta Bioquimica Clinica Latinoamericana (1996), 30(4), 357-369
CODEN: ABCLDL; ISSN: 0325-2957
PUBLISHER: Federacion Bioquimica de la Provincia de Buenos Aires
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Spanish

AB A review with 25 refs. The importance of synthetic organic pesticides will continue to increase as the world population grows relative to a fairly constant amount of arable land. Pesticides save 10% of the crops, but an addnl. 37% is still lost to pests. Insecticides are used to illustrate the needs and prospects for safer and more effective agrochems. The major insecticides (88% based on sales) act at four nerve targets: acetylcholinesterase (62%), the voltage-dependent sodium channel (18%), the gamma-aminobutyric acid-gated chloride ion channel (6%), and the nicotinic acetylcholine receptor (2%). The utility of the first three of these targets will be increasingly compromised by insect resistance problems, while the nicotinic acetylcholine receptor is projected to grow in significance. Compds. that act at non-nerve targets will also become more important. They include uncouplers of oxidative phosphorylation, inhibitors of NADH/ubiquinone oxidoreductase and of ATPase, growth regulators (juvenoids and ecdysone agonists), and microbial pesticides acting at a variety of sites. With about 300 com. insecticides and with only two to five new compds. likely to be introduced per yr on the average, it is essential to make the most effective use of the current insecticides. The newer chems. are often more complex and more expensive compared to earlier insecticides, but they are used at much lower rates, thereby making them cost effective and minimizing the environmental burden. They are also ideally active against resistant strains, compatible with integrated pest management programs, and possess minimal mammalian toxicity.

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L34 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1996:352829 HCAPLUS Full-text
DOCUMENT NUMBER: 125:28221
ORIGINAL REFERENCE NO.: 125:5415a,5418a
TITLE: Metabolism of the herbicide chlortoluron in transgenic tobacco plants expressing the fused enzyme between rat cytochrome P4501A1 and yeast NADPH -cytochrome P450 oxidoreductase
AUTHOR(S): Shiota, Noriaki; Inui, Hideyuki; Ohkawa, Hideo
CORPORATE SOURCE: Graduate School of Science and Technology, Kobe Univ., Kobe, 657, Japan
SOURCE: Pesticide Biochemistry and Physiology (1996), 54(3), 190-198
CODEN: PCBPBS; ISSN: 0048-3575
PUBLISHER: Academic
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Metabolism of chlortoluron was examined in transgenic tobacco plants expressing the genetically-engineered fused enzyme between rat cytochrome P 4501A1 and yeast NADPH-cytochrome P 450 oxidoreductase. The transgenic plants were resistant to chlortoluron at 10 to 50 μM in Murashige and Skoog medium; however, 10 μM was toxic to control plants. There were no differences in the

uptake and the translocation of [14C]chlortoluron between transgenic and control plants. The major metabolites produced by transgenic plants were N-demethylated metabolite, 4-carboxyphenyl metabolite, 4-carboxyphenyl metabolite, and their conjugates, whereas only the N-demethylated metabolite was produced by control plants. In vitro studies also confirmed that the fused enzyme expressed in the microsomal fraction of the transgenic plants exhibited both ring-Me hydroxylation and N-demethylation activities toward chlorotoluron. The transgenic tobacco, expressing the fused enzyme, metabolized chlortoluron to yield larger amts. of nonphytotoxic metabolites, resulting in tolerance to the herbicide.

L34 ANSWER 14 OF 33 CROPU COPYRIGHT 2008 THOMSON REUTERS on STN
ACCESSION NUMBER: 1995-85776 CROPU H S Full-text
TITLE: In vitro imazethapyr metabolism by an inducible cytochrome P450 monooxygenase in corn.
AUTHOR: Baerg R J; Barrett M
CORPORATE SOURCE: Univ.Idaho; Univ.Kentucky
LOCATION: Aberdeen, Idaho; Lexington, Ky., USA
SOURCE: Abstr.Meet.Weed Sci.Soc.Am. (35, 70, 1995)
AVAIL. OF DOC.: University of Idaho, Aberdeen, Idaho, U.S.A.
DOCUMENT TYPE: Conference
LANGUAGE: English
FIELD AVAIL.: AB; LA; CT; MPC
AN 1995-85776 CROPU H S Full-text
AB Imazethapyr conversion to the hydroxyethyl pyridine metabolite was determined in-vitro, in microsomes from naphthalic anhydride-treated corn shoots. Apparent km for imazethapyr was more than 1 mM, with a Vmax of at least 300 pmole/min/mg microsomal protein. N and CO inhibited activity; CO inhibition was partially reversed by light. Enzyme activity was also inhibited by NADPH cytochrome P-450 reductase antibody, cytochrome C, aminobenzotriazole, tetcyclacis and piperonyl butoxide. In-vitro imazethapyr hydroxylation was inhibited by bentazon, chlorimuron, chlorsulfuron, nicosulfuron, chlortoluron, linuron, diclofop, 2,4-D, dicamba, imazaquin and laurate, but not cinnamate or tridiphane. NADPH-dependent hydroxylation of imidazolinone ethyl (imazethapyr) was higher than that of methyl (AC-263222; imazamethapyr) or butyl analogs. (conference abstract).
ABEX Under standard assay conditions, 14C-imazethapyr (100 uM) was incubated in reaction buffer (100 mM NaPO4 (pH 7.4), 4 mg/ml BSA, and 0.75 mM NADPH) for 30 min at 30 deg. Addition of up to 4 mg/ml BSA to the reaction buffer increased imazethapyr hydroxylation. Rabbit serum had a similar effect, but other proteins did not improve enzyme activity. NADPH was a better electron donor than NADH, but enzyme activity at low NADPH concentrations was slightly enhanced by NADH. In-vitro imazethapyr hydroxylation was inhibited by 80% with bentazon, 77% with chlorimuron, 70% with chlorsulfuron, 52% with nicosulfuron, 64% with chlortoluron, 44% with linuron, 35% with diclofop, 47% with 2,4-D, 28% with dicamba, 23% with imazaquin and 26% with lauric acid, but increased by 9% with cinnamic acid and 1% with tridiphane. NADPH -dependent hydroxylation was higher with imazethapyr (46 pmole/min/mg) than with AC-263222 (25 pmole/min/mg), with little or no activity with the butyl analog.

L34 ANSWER 15 OF 33 CROPU COPYRIGHT 2008 THOMSON REUTERS on STN
ACCESSION NUMBER: 1994-85285 CROPU H S Full-text
TITLE: Preliminary biochemical characterization of the first step in the degradation of 2,4,5-trichlorophenoxyacetate by Pseudomonas cepacia AC1100.
AUTHOR: Gray G L; Xun L

CORPORATE SOURCE: Univ.Washington-State
LOCATION: Richland, Wash., USA
SOURCE: Abstr.Gen.Meet.Am.Soc.Microbiol. (94 Meet., 454, 1994)
AVAIL. OF DOC.: Washington State University-Tri-Cities, Richland, Washington, U.S.A.
DOCUMENT TYPE: Conference
LANGUAGE: English
FIELD AVAIL.: AB; LA; CT
AN 1994-85285 CROPU H S Full-text
AB A cell free extract of Pseudomonas cepacia AC1100, prepared from a sodium-succinate-grown culture, converted 2,4,5-T to 2,4,5-trichlorophenol and 2,4-D to 2,4-dichlorophenol in reactions requiring O2 and NAD(P)H. Phenylagarose chromatography of the extract yielded no active single fraction, but mixing of 2 distinct fractions (containing compA and compB) resulted in recovery of enzyme activity. Biochemical analyses of compB showed that the properties were similar to that of the terminal oxygenase component of a family of bacterial multicomponent dioxygenases. As these enzymes also required one or two proteins for transfer of electron from NAD(P)H to the oxygenase, it is surmised that compA, which is required together with compB, may have a similar function. (conference abstract).
ABEX CompB was composed of two 47 kDal alpha subunits and two 23 kDal beta subunits. The 400-600 mm spectrum of the native (oxidized) compB had maxima at -430nm and -560 nm (shoulder), whereas upon reduction with sodium dithionite the spectrum had a single -530 nm maximum.CompB also contained iron and acid-labile sulfur. The results have revealed that the mechanism used by P. cepacia for 2,4,5-T and 2,4-D biodegradation is distinct from that used by Alcaligenes eutrophus for 2,4-D biodegradation (a single component alpha-ketoglutarate-requiring dioxygenase).

L34 ANSWER 16 OF 33 CROPU COPYRIGHT 2008 THOMSON REUTERS on STN
ACCESSION NUMBER: 1994-82252 CROPU H S Full-text
TITLE: Metabolic alterations in hepatocytes promoted by the herbicides paraquat, dinoseb and 2,4-D.
AUTHOR: Palmeira C M; Moreno A J; Madeira V M C
CORPORATE SOURCE: Univ.Coimbra
LOCATION: Coimbra, Port.
SOURCE: Arch.Toxicol. (68, No. 1, 24-31, 1994) 6 Fig. 48 Ref.
CODEN: ARTODN
AVAIL. OF DOC.: Department of Zoology, University of Coimbra, P-3049, Coimbra Codex, Portugal.
DOCUMENT TYPE: Journal
LANGUAGE: English
FIELD AVAIL.: AB; LA; CT
AN 1994-82252 CROPU H S Full-text
AB In-vitro studies were conducted with freshly isolated rat hepatocytes to determine the cytotoxic effects of paraquat, dinoseb and 2,4-D.Paraquat and 2,4-D (1-10 mM) caused a dose and time dependent cell death, as detected by cytosolic lactate dehydrogenase leakage, accompanied by depletion of intracellular glutathione (GSH) and a parallel increase of oxidized glutathione (GSSH). Dinoseb, the most cytotoxic compound under study (used in concentrations 1000-fold lower than the other 2 herbicides), exhibited moderate effects on the level of GSH and GSSH. All 3 herbicides depleted the levels of ATP and NADH, with a concomitant increase in the levels of ADP, AMP and NAD+. ATP and NADH depletion was observed in the millimolar range for paraquat and 2,4-D, and the micromolar range for dinoseb.
ABEX The results have clearly demonstrated that paraquat, dinoseb and 2,4-D induce a drastic reduction of ATP availability in hepatocytes. Therefore, decreased ATP levels may cause deleterious effects on a variety of cellular activities, including the ability of the cell to maintain ionic gradients through the function of ATP-dependent

translocases and the polymerization of microfilaments and microtubules that may lead to cytoskeletal disruption. In addition, the decrease in NADH compromises the activity of protective enzymes such as glutathione S-reductase, further increasing the susceptibility to cell death.It is concluded that cell damage occurring from intoxication may be primarily related to GSH oxidation, with consequent NADH and ATP depletion.

L34 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 1994:601002 HCAPLUS Full-text
DOCUMENT NUMBER: 121:201002
ORIGINAL REFERENCE NO.: 121:36467a,36470a
TITLE: Herbicide-resistant tobacco plants expressing the fused enzyme between rat cytochrome P4501A1 (CYP1A1) and yeast NADPH-cytochrome P450 oxidoreductase
AUTHOR(S): Shiota, Noriaki; Nagasawa, Akitu; Sakaki, Toshiyuki; Yabusaki, Yoshiyasu; Ohkawa, Hideo
CORPORATE SOURCE: Grad. Sch. Sci. Technology, Kobe Univ., Nada-ku, 657, Japan
SOURCE: Plant Physiology (1994), 106(1), 17-23
CODEN: PLPHAY; ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Transgenic tobacco (Nicotiana tabacum cv Xanthi) plants expressing a genetically engineered fused enzyme between rat cytochrome P 4501A1 (CYP1A1) and yeast NADPH-cytochrome P 450 oxidoreductase were produced. The expression plasmid pGFC2 for the fused enzyme was constructed by insertion of the corresponding cDNA into the expression vector pNG01 under the control of the cauliflower mosaic virus 35S promoter and nopaline synthase gene terminator. The fused enzyme cDNA was integrated into tobacco genomes by Agrobacterium infection techniques. In transgenic tobacco plants, the fused enzyme protein was localized primarily in the microsomal fraction. The microsomal monooxygenase activities were approx. 10 times higher toward both 7-ethoxycoumarin and benzo[a]pyrene than in the control plant. The transgenic plants also showed resistance to the herbicide chlortoluron.

L34 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1993:35005 HCAPLUS Full-text
DOCUMENT NUMBER: 118:35005
ORIGINAL REFERENCE NO.: 118:6299a,6302a
TITLE: Isolation and kinetic properties of acetohydroxy acid isomeroreductase from spinach (Spinacia oleracea) chloroplasts overexpressed in Escherichia coli
AUTHOR(S): Dumas, Renaud; Job, Dominique; Ortholand, Jean Yves; Emeric, Gilbert; Greiner, Alfred; Douce, Roland
CORPORATE SOURCE: Rhone-Poulenc, Lyon, 69263, Fr.
SOURCE: Biochemical Journal (1992), 288(3), 865-74
CODEN: BIJOAK; ISSN: 0306-3275
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Acetohydroxy acid isomeroreductase (I) catalyzes a 2-step reaction, an alkyl migration and a NADPH-dependent reduction, in the assembly of the C skeletons of branched-chain amino acids. Detailed investigations of I aimed at elucidating the biosynthetic pathway of branched-chain amino acids and at designing new inhibitors of the enzyme having herbicidal potency have so far been conducted with the enzymes isolated from bacteria. To gain more information on a plant system, the gene encoding mature I from spinach leaf chloroplasts was used to transform E. coli cells and to overexpress the

enzyme. A rapid protocol is described that allows the preparation of large quantities of pure spinach chloroplast I. Kinetic and structural properties of plant I expressed in E. coli were compared with those reported in previous studies on the native enzymes purified from spinach chloroplasts and with those reported for the corresponding enzymes isolated from E. coli and Salmonella typhimurium. Both the plant and the bacterial enzymes obeyed an ordered mechanism in which NADPH binds 1st, followed by substrate (either 2-acetolactate or 2-aceto-2-hydroxybutyrate). Inhibition studies employing an inactive substrate analog, 2-hydroxy-2-methyl-3-oxopentanoate, showed, however, that the binding of 2-hydroxy-2-methyl-3-oxopentanoate and NADPH occurs randomly, suggestive of some flexibility in the plant enzyme active site. The observed preference of I for 2-aceto-2-hydroxybutyrate over 2-acetolactate was discussed with regard to the contribution of I activity in the partitioning between isoleucine and valine biosyntheses. Moreover, the kinetic properties of chloroplast I support the notion that biosynthesis of branched-chain amino acids in plants is controlled by light. As judged by anal. ultracentrifugation and gel filtration analyses, the overexpressed plant enzyme is a dimer of identical subunits.

L34 ANSWER 19 OF 33 CABA COPYRIGHT 2008 CABI on STN

ACCESSION NUMBER:	92:100303 CABA Full-text
DOCUMENT NUMBER:	19920757200
TITLE:	Modulation of ethylene synthesis in acotyledonous soybean and wheat seedlings
AUTHOR:	Kraus, T. E.; Murr, D. P.; Hofstra, G.; Fletcher, R. A.
CORPORATE SOURCE:	Department of Environmental Biology, University of Guelph, Guelph, Ont. N1G 2W1, Canada.
SOURCE:	Journal of Plant Growth Regulation, (1992) Vol. 11, No. 1, pp. 47-53. 22 ref. ISSN: 0721-7595
DOCUMENT TYPE:	Journal
LANGUAGE:	English
ENTRY DATE:	Entered STN: 1 Nov 1994 Last Updated on STN: 1 Nov 1994

AB The characteristics of ethylene production and ACC conversion in 8-d-old soyabean seedlings were examined and a relationship between cytochrome P-450 activity and ethylene-forming enzyme (EFE) activity was found. An atmosphere containing 10% carbon monoxide inhibited ethylene production and ACC conversion in control soyabean seedlings, but only slightly affected seedlings treated with uniconazole. Foliar application of triclopyr, a pyridine analogue of the phenoxy herbicides, increased ethylene production and ACC conversion in control, but not in uniconazole-treated seedlings. Triclopyr treatment also resulted in a 3-fold increase in extractable cytochrome P-450 of 5-d-old etiolated soyabeans. At equimolar concentrations tetcyclacis was more effective than uniconazole in reducing shoot elongation and endogenous ethylene production. Although uniconazole and tetcyclacis did not inhibit ACC conversion in nonherbicide-treated soyabean seedlings, they prevented the increase in ACC-dependent EFE activity following triclopyr application. However, the rate of ACC conversion in etiolated soyabean segments was sensitive to uniconazole, and tetcyclacis inhibited the rate of ACC conversion by 2.6-fold in etiolated soyabean segments within 4 h after treatment. Microsomal membranes were isolated from 5-d-old naphthalic anhydride-treated etiolated wheat shoots (containing higher cytochrome P-450 levels than soyabean shoots). Optical difference spectroscopy demonstrated that ACC generated binding spectrum characteristic of a reverse-type-I cytochrome P-450 substrate when combined with reduced microsomes. In vitro conversion of ACC to ethylene by microsomal membranes was NADPH-dependent, inhibited by carbon

monoxide and had an apparent Km and Vmax of 45 [micro]M and 0.345 nl/mg protein/h, respectively.

L34 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1992:250365 HCAPLUS Full-text
DOCUMENT NUMBER: 116:250365
ORIGINAL REFERENCE NO.: 116:42319a,42322a
TITLE: Interaction of maize cytochrome P450 with safeners and 1-aminobenzotriazole
AUTHOR(S): Barta, I. C.; Dutka, F.
CORPORATE SOURCE: Cent. Res. Inst. Chem., Hung. Acad. Sci., Budapest, H-1525, Hung.
SOURCE: Brighton Crop Protection Conference--Weeds (1991), (Vol. 3), 1127-32
CODEN: BCPWE2; ISSN: 0955-1514
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The inhibitory action of EPTC, EPTC-sulfoxide (EPTC-SO), 1-aminobenzotriazole (ABT) and safeners on cytochrome P 450 in vitro was investigated spectrophotometrically on microsomes of etiolated maize seedlings. While EPTC, EPTC-SO, ABT, N,N-diallyl-2,2-dichloroacetamide (dichlormid) and 2-dichloromethyl-2-methyl-1,3-dioxolane (MG-191) were not inhibitors of oxidized enzyme at mM levels, naphthalic anhydride blocked the enzyme at 100 μM. Metabolic intermediate complexes were not detected after a short incubation of chems. and microsomes in the absence of NADPH. Under metabolic reducing conditions both ABT and safeners markedly decreased the cytochrome P 450 level in the reaction medium indicating that the safeners acted in a similar manner to ABT.

L34 ANSWER 21 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 90:82039 CABA Full-text
DOCUMENT NUMBER: 19901182748
TITLE: Effect of 4-amino-6-methyl-3-phenylamino-1,2,4-triazin-5(4H)-one on the lignification process catalysed by peroxidase from lupin (Lupinus albus)
AUTHOR: Munoz, R.; Martinez-Martinez, A.; Ros Barcelo, A.; Pedreno, M. A.
CORPORATE SOURCE: Departamento de Biologia Vegetal, Facultad de Biologia, Universidad de Murcia, 30071 Murcia, Spain.
SOURCE: Pesticide Science, (1990) Vol. 28, No. 3, pp. 283-288. 16 ref.
ISSN: 0031-613X
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994
AB 4-Amino-6-methyl-3-phenylamino-1,2,4-triazin-5(4H)-one, a compound structurally analogous to metribuzin, caused a powerful inhibition of the cell-wall lignification catalysed by peroxidase from L. albus. The 2 reactions involved in this lignification process were: oxidative polymerisation of coniferyl alcohol and the generation of hydrogen peroxide at the expense of NADH oxidation.

L34 ANSWER 22 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 92:96066 CABA Full-text
DOCUMENT NUMBER: 19922321912

TITLE: Hydroxylation of primisulfuron by an inducible cytochrome P450-dependent monooxygenase system from maize
AUTHOR: Fonne-Pfister, R.; Gaudin, J.; Kreuz, K.; Ramsteiner, K.; Ebert, E.
CORPORATE SOURCE: Agricultural Division, Ciba-Geigy Ltd., 4002 Basle, Switzerland.
SOURCE: Pesticide Biochemistry and Physiology, (1990) Vol. 37, No. 2, pp. 165-173. 21 ref.
ISSN: 0048-3575
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB When microsomes were prepared from etiolated maize (Zea mays) cv. Blizzard seedlings and incubated with 14C-labelled primisulfuron, 2 enzymatic reaction products were formed in the presence of O2 and NADPH. Comparison by HPLC with synthetic reference standards and MS of the 2 metabolites in vitro revealed that primisulfuron was hydroxylated at 2 different sites - at the phenyl and at the pyrimidine rings. Both hydroxylation reactions were inhibited in vitro by tetcyclacis as well as by CO in the presence of O2. CO inhibition was reversed by irradiation of the reaction mixture with white light. Enzyme activities were localized predominantly in the shoots. Apparent Km values for primisulfuron were estimated to be 137 and 47 [micro]M, and Vmax to be 427 and 261 pmol h-1 mg-1 protein, for the hydroxylation on the pyrimidine and phenyl rings, resp. Formation of these metabolites from primisulfuron was barely detectable in microsomes from germinating seedlings. However, seed treatment with 0.2% w/w of the safener, CGA 154281 (benoxacor), increased microsomal cytochrome P450 levels 2-fold and dramatically stimulated primisulfuron phenyl- and pyrimidine-ring hydroxylation in vitro. From these data it is concluded that hydroxylation of primisulfuron in maize microsomes is catalysed by an inducible cytochrome P450 monooxygenase system.

L34 ANSWER 23 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 91:51619 CABA Full-text
DOCUMENT NUMBER: 19910743318
TITLE: Stimulation of enzymes of non-photosynthetic C4 metabolism in cultured cotton ovules by fluridone
AUTHOR: Kaur, K.; Nayyar, H.; Basra, A. S.; Malik, C. P.
CORPORATE SOURCE: Department of Botany, Punjab Agricultural University, Ludhiana 141004, India.
SOURCE: Acta Physiologiae Plantarum, (1990) Vol. 12, No. 1, pp. 3-6. 14 ref.
ISSN: 0137-5881
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB Fertilized cotton ovules were cultured in the presence of 5 [micro]g ABA or 5 [micro]g fluridone (an inhibitor of ABA biosynthesis)/cm[sup3]. After 20 d, fibre production was measured in total fibre units (TFU) by a staining-destaining method, where 1 TFU is equivalent to a 0.1 absorbance reading of the destaining solution at 624 nm. Fibre production was about 5.4 TFU in the control, 6.4 TFU with fluridone and 4.1 TFU with ABA. Activities of PEP carboxylase, NAD-malate dehydrogenase, glutamate-oxaloacetate transaminase and NADPH-malic enzyme showed similar changes to those in fibre production. It is concluded that the inhibitory effect of ABA on fibre production may be partly due to its effect on malate synthesizing enzymes.

L34 ANSWER 24 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 88:81191 CABA Full-text
DOCUMENT NUMBER: 19880714740
TITLE: Auxin-stimulated NADH oxidase purified from plasma membrane of soybean
AUTHOR: Brightman, A. O.; Barr, R.; Crane, F. L.; Morre, D. J.
CORPORATE SOURCE: Dep. Biol. Sci., Purdue Univ., West Lafayette, IN 47907, USA.
SOURCE: Plant Physiology, (1988) Vol. 86, No. 4, pp. 1264-1269. 25 ref.
ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB NADH oxidation by plasma membrane vesicles purified from hypocotyls of etiolated soyabean seedlings by 2-phase partition was stimulated 2- to 3-fold by IAA, 2,4-D and NAA. The stimulation was concn dependent in the presence or absence of detergent with a maximum for 2,4-D at 1 [micro]M. The NADH oxidation activity was solubilized with the zwitterionic detergent CHAPS and purified by ion exchange chromatography and gel filtration approx. 2000-fold over the total homogenate. Both the partially purified fraction and an active band from nondenaturing gel electrophoresis revealed the same 3 bands when analysed by denaturing gel electrophoresis. When obtained from plasma membrane vesicles from the region of rapid cell elongation, the NADH oxidase complex retained auxin responsiveness throughout purification (3- to 5-fold stimulation by 1 [micro]M 2,4-D).

L34 ANSWER 25 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 88:57676 CABA Full-text
DOCUMENT NUMBER: 19880711980
TITLE: Inhibition of plasma membrane redox activities and elongation growth of soybean
AUTHOR: Morre, D. J.; Crane, F. L.; Barr, R.; Penel, C.; Wu, L. Y.
CORPORATE SOURCE: Dep. Med. Chem., Purdue Univ., West Lafayette, IN 47909, USA.
SOURCE: Physiologia Plantarum, (1988) Vol. 72, No. 2, pp. 236-240. 23 ref.
ISSN: 0031-9317
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB NADH-ferricyanide oxido-reductase from purified plasma membrane vesicles isolated by aqueous 2-phase partition from segments of etiolated hypocotyls of soyabean cv. Williams was used as a measure of plasma membrane redox activity. Elongation growth of hypocotyl segments floated on the solutions was determined in parallel. Cisplatinum (II) diammine dichloride (cis-platin), adriamycin and p-nitrophenylacetate, agents known to inhibit cell proliferation and plasma membrane redox activities in mammalian cells inhibited both NADH-ferricyanide oxidoreductase of the isolated membrane vesicles and elongation growth of intact hypocotyl segments. 2,4-D-induced growth of the isolated segments was inhibited preferentially at drug concn where control growth was affected only slightly. It is suggested that there could be a connection between plasma membrane redox reactions and the control of elongation growth in plants.

L34 ANSWER 26 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 86:22609 CABA Full-text
DOCUMENT NUMBER: 19860786017
TITLE: Sorghum (Sorghum bicolor) seed safeners as insecticide synergists
AUTHOR: Ketchersid, M. L.; Plapp, F. W.; Merkle, M. G.
CORPORATE SOURCE: Dep. of Soil and Crop Sci., Texas A & M Univ., College Station, TX 77843, USA.
SOURCE: Weed Science, (1985) Vol. 33, No. 6, pp. 774-778. 18 ref.
ISSN: 0043-1745
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB The oximes cyometrinil CGA-92194 [oxabetrinil], 2-pyridinealdoxime-O-benzyl ether and 2-pyridineal doxime-O-phenethyl ether, protectants for sorghum against chloroacetanilide herbicides, increased the toxicity of the insecticide propoxur to a resistant strain of housefly (Musca domestica). Flurazole, a nonoxime protectant for grain sorghum, had less effect on the toxicity of propoxur than did the oximes. Metolachlor also increased the toxicity of propoxur to houseflies. Commercially available insecticide synergists increased insecticide activity by inhibiting NADPH-dependent microsomal mixed-function oxidase activity. Sorghum coleoptiles possessed the enzyme system necessary to oxidase aldrin, which is a standard test for oxidative metabolism in insects.

L34 ANSWER 27 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1984:204921 HCAPLUS Full-text
DOCUMENT NUMBER: 100:204921
ORIGINAL REFERENCE NO.: 100:31048h,31049a
TITLE: Nitrate and nitrite reduction as influenced by S-(4-chlorobenzyl) N,N-diethylthiocarbamate in two tropical weed species
AUTHOR(S): Reddy, N. V. R.; Ramaiah, K. R.; Reddy, K. B.; Rao, K. R.
CORPORATE SOURCE: Dep. Bot., Sri Venkateswara Univ., Tirupati, 517 502, India
SOURCE: Proceedings - Indian Academy of Sciences, Plant Sciences (1983), 92(5), 393-6
CODEN: PIPLDS; ISSN: 0253-410X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An increase in nitrate reductase [9013-03-0] activity was observed with a concomitant decrease in nitrite reductase [9080-03-9] activity in S-(4-chlorobenzyl) N,N-diethyl thiocarbamate [28249-77-6]-treated leaves of Acalypha indica and Dactyloctenium aegyptium. This nonphotosynthetic selective herbicide had an uncoupler effect similar to that of DNP, which in turn enhanced the nitrate reductase activity. The generation of NADH [58-68-4], linked to the glycolytic process, provided high levels of NADH for nitrate reduction and its accumulation in treated plants over the control , even in darkness.

L34 ANSWER 28 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1980:439365 HCAPLUS Full-text
DOCUMENT NUMBER: 93:39365

ORIGINAL REFERENCE NO.: 93:6469a,6472a
TITLE: Reduction of nitrate and nitrite in lambsquarters (Chenopodium album) biotypes resistant and susceptible to atrazine toxicity
AUTHOR(S): Lawrence, John M.; Foster, Robert J.; Herrick, Hedwig E.
CORPORATE SOURCE: Dep. Agric. Chem., Washington State Univ., Pullman, WA, 99164, USA
SOURCE: Plant Physiology (1980), 65(5), 984-9
CODEN: PLPHAY; ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The nitrite [14797-65-0]-reducing activity of the normal susceptible biotype of lambsquarters (Chenopodium album) was strongly inhibited by atrazine [1912-24-9] in the assay medium, both in the case of the in vivo assays of leaf discs in light, and in vitro photoredn. assays of crude exts. In vitro assays of crude exts. with methylviologen or ferredoxin supplying the reducing potential were not inhibited by atrazine. In the resistant biotype, inhibition of nitrite reduction did not occur with any of the above assays. Thus, it appears that atrazine does not inhibit nitrite reductase itself, but rather the availability of photosynthetically supplied electrons for the reduction Atrazine had no effect when added to the media for either in vivo or in vitro assays of nitrate [14797-55-8] reduction by either the susceptible or resistant biotype. Young lambsquarters were treated with atrazine by spraying the leaves at a rate which was lethal for susceptible plants after 5 or 6 days, but had little effect on the resistant biotype. Nitrite did not accumulate in either biotype, but remained present at the level of about 0.1 µg nitrite N/g fresh weight The nitrate content of susceptible-type leaves did increase to two or three times the initial level, during the first four days after spraying. The only visible effect on the plants during this time was a decreased growth rate. Twenty-four hours after spraying the following activities had fallen to 25% or less of the activities of solvent-sprayed control plants; in vivo nitrite reductase [9080-03-9], in vivo nitrate reductase [9013-03-0], in vitro NADH-nitrate reductase [9013-03-0], in vitro reduced FMN-nitrate reductase [59678-80-7], and in vitro NADH-diaphorase [9079-67-8]. In these atrazine-treated plants, in vitro nitrite reductase activity with reducing potential supplied by methylviologen was not affected, nor were any of the above activities in leaves of atrazine-treated resistant plants. The abrupt fall in nitrate reductase represents an effect of atrazine not directly related to inhibition of photosynthesis.

L34 ANSWER 29 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 78:42695 CABA Full-text
DOCUMENT NUMBER: 19780766094
TITLE: Polarity of production of polyphenols and development of various enzyme activities in cut-injured sweet potato root tissue
AUTHOR: Tanaka, Y.; Uritani, I.
CORPORATE SOURCE: Lab. of Biochem., Fac. of Agric., Nagoya Univ., Chikusa, Nagoya 464, Japan.
SOURCE: Plant Physiology, (1977) Vol. 60, No. 4, pp. 563-566. 17 ref.
ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB Investigation of polyphenol production in cut-injured sweet potato tubers by histochemical and quantitative methods showed that large amounts of polyphenols were produced in the proximal side of 2 cm/thick tissue segments but only small amounts in cells of the distal side. Similarly, enzymes related to polyphenol biosynthesis, phenylalanine ammonia-lyase and trans-cinnamic acid 4-hydroxylase were formed in the proximal side of tissue pieces but to a lesser extent in the distal side. Similar polarity was observed in the development of activities of various enzymes, such as NADPH-cytochrome c oxidoreductase, acid invertase, peroxidase, o-diphenol oxidase, and cytochrome c-O2 oxidoreductase. Treatment of the distal surface of tissue pieces with IAA or 2,4-D caused polyphenol production but treatment with GA, ABA, kinetin, or ethylene had little effect, suggesting that IAA may play a role in the metabolic response to cut injury.

L34 ANSWER 30 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 77:29704 CABA Full-text
DOCUMENT NUMBER: 19770543956
TITLE: Ecdysone metabolism by soluble enzymes from three species of Diptera and its inhibition by the insect growth regulator TH-6040
AUTHOR: Yu, S. J.; Terriere, L. C.
CORPORATE SOURCE: Department of Entomology, Oregon State University, Corvallis, OR 97331, USA.
SOURCE: Pesticide Biochemistry and Physiology, (1977) Vol. 7, No. 1, pp. 48-55. 3 fig. 19 ref.
ISSN: 0048-3575
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB Homogenates of larvae, pupae and adults of Musca domestica L., Sarcophaga bullata Parker and Phormia regina (Mg.) were examined in the laboratory for enzymes converting alpha and beta -ecdysone to apolar products. Most of the activity was found in the soluble fraction from the first 2 species, but none of the fractions from P. regina was active. Ecdysone metabolism appeared to involve 2 enzymes, of which 1 required NADPH. The product of the other enzyme was thought to be 3-dehydroecdysone, which was further converted to the 3 alpha -hydroxy isomer of ecdysone by the NADPH-requiring enzyme. In larvae fed with the insect growth regulator diflubenzuron (TH-6040) at 0.3-10 p.p.m. in the rearing diet, the activity of the enzyme producing 3-dehydroecdysone was reduced by 20-80%. It is suggested that the growth regulator affects pupal-adult ecdysis by inhibiting ecdysone metabolism.

L34 ANSWER 31 OF 33 CABA COPYRIGHT 2008 CABI on STN
ACCESSION NUMBER: 75:51606 CABA Full-text
DOCUMENT NUMBER: 19750736284
TITLE: Photosynthesis and the induction of nitrate reductase and nitrite reductase in bean leaves
AUTHOR: Sluiters-Scholten, C. M. T.
CORPORATE SOURCE: Dep. of Pl. Physiol., Amsterdam Univ., Amsterdam, Netherlands.
SOURCE: Planta, (1975) Vol. 123, No. 2, pp. 175-184. 23 ref.
ISSN: 0032-0935
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 1 Nov 1994
Last Updated on STN: 1 Nov 1994

AB In leaves of Phaseolus vulgaris cv. Prelude the light-induced increase in activity of NADH-nitrate oxidoreductase (NAR) and reduced benzylviologen-nitrate oxidoreductase (NIR) began at a certain stage in the development of the chloroplasts. In leaves with completely developed chloroplasts a greater increase in activity of NAR and NIR was observed, after induction by the addition of nitrate, in the light than in the dark. Diuron inhibited the increase in activity of the 2 enzymes in the light. Both in the light in the presence of diuron and in the dark the increase in activity reached a higher level on addition of sucrose. Induction of NAR but not NIR could be observed in excised etiolated leaves. No induction was found in leaves of intact etiolated seedlings. The relation between photosynthetic reactions and the increase in activity of NAR and NIR is discussed. It was suggested that NADH, indirectly formed by photosynthetis, protects NAR and affects in this way the balance between synthesis and breakdown of the enzyme. The increase in activity of NIR was possibly influenced by the presence of reduced ferredoxin.

L34 ANSWER 32 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1975:133898 HCAPLUS Full-text
DOCUMENT NUMBER: 82:133898
ORIGINAL REFERENCE NO.: 82:21379a,21382a
TITLE: Chemicalizing as a principal means of intensifying and rationalizing plant production
AUTHOR(S): Schilling, Guenther
CORPORATE SOURCE: Sekt. Pflanzenprod., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, Ger. Dem. Rep.
SOURCE: Wissenschaftliche Zeitschrift - Martin-Luther-Universitaet Halle-Wittenberg, Mathematisch-Naturwissenschaftliche Reihe (1974), 23(2), 15-35
CODEN: WMHMAP; ISSN: 0138-1504
DOCUMENT TYPE: Journal
LANGUAGE: German
GI For diagram(s), see printed CA Issue.
AB Fertilization of winter wheat with 60-180 kg N/ha, gave optimum results at 115 kg N/ha. The optimum N doses on annual pasture grass were 195-306 kg/ha, in dependence on irrigation and doses of liquid manure. The optimum N dose for sugar beet was 160 kg N/ha. Fertilizing winter wheat in spring with 120 kg N/ha, gave the best results when it was not preceded by N-fertiliztion in autumn. CCC [999-81-5] applied to wheat at 2 kg/ha, left in straw a residue of 3.6 ppm, and at 1 kg CCC/ha, the residue in grain was 0.74-0.9 ppm. The stem length of spring wheat cultured in sand in pots, was 73.3% and 85.7% of control in plants treated with CCC, and with BMH [[Br(CH2)2N+Me2(NH2)]Br-] [14652-09-6], resp. However the treatment with CCC or BMH did not affect the rate of degradation of tritiated giberellic acid (I) [77-06-5] by the wheat, suggesting that CCC and BMH dwarf the wheat rather by inhibition of gibberellin biosynthesis than by acceleration of gibberellin breakdown. CCC and BMH inhibited incorporation of 14C-labeled mevalonic acid [150-97-0] into gibberellins by wheat, supporting the above suggestion. New undisclosed products (X,X1 and X2) interfered with I synthesis probably at a different step than did CCC. The grain yield of spring wheat treated with X1 and CCC was 113% and 91% of control, resp; the stem length was 82%, and 78%, resp., and the stem thickness was 125%, and 100% resp. In spring barley, the yield of plants treated with X2 and CCC, was 144 and 114% of control, resp., stem length was 76 and 92%, resp., and the stem thickness was 123 and 103%, resp. The new products have the unique property of increasing the stem thickness, important in lodging prevention. Nontoxic character of new lodging-control products is suggested. Treatment of excised Sinapis alba leaves with fructose-1,6-diphosphate (II) [488-69-7] enabled starch [9005-25-8] synthesis in spite of application of atrazine [1912-24-9], proximpham [2828-42-4],

pyrazon [1698-60-8], diuron [330-54-1], benzthiazuron [1929-88-0], or phenmedipham [13684-63-4]. Treatment with 3-phosphoroglyceric aldehyde [142-10-9] enabled starch synthesis in excised S. alba leaves in spite of the atrazine treatment. 3-Phosphorglyceric acid did not abolish the herbicide effects. Diuron, pyrazon, benzthiazuron, phenmediham, proximpham, and atrazine, at 10-4M, blocked photosynthetic NADPH2 [53-57-6] formation and O [7782-44-7] release in isolated S. alba chloroplasts and leaf sections. Diaminodurol-ascorbate mixture [54719-44-7] 84.8-95.1% abolished the inhibition of the NADPH2 formation by the herbicides. Thus, the above herbicides block the photoreaction 2 (Merbach, W., 1970). The yield of winter wheat infested with Cercosporella and treated with 600 l. 0.4% VF 671 [54991-95-6]/ha, or 600 l 0.2% Orthocide [133-06-2]/ha was 113 and 97% in reference to 37.2 double ton/ha, as 100%.

L34 ANSWER 33 OF 33 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1969:437669 HCAPLUS Full-text
DOCUMENT NUMBER: 71:37669
ORIGINAL REFERENCE NO.: 71:6933a,6936a
TITLE: Activity of oxidative enzymes in pea plants treated with chemical growth regulators
AUTHOR(S): Voinilo, V. A.
CORPORATE SOURCE: Inst. Eksp. Bot., Minsk, USSR
SOURCE: Doklady Akademii Nauk BSSR (1969), 13(4), 367-70
CODEN: DBLRAC; ISSN: 0002-354X
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Under the influence of chlorocholine chloride (CCC) and the herbicides dalapon, atrazine, and MCPA, the oxidative electron transport in pea seedlings is shifted from the cytochrome to a flavine oxidase system. This is manifested by an increase of the peroxidase activity and a fall of the activity of NADH-cytochrome c reductase, succinate-cytochrome c reductase, and cytochrome oxidase in the mitochondria and somewhat in the cytoplasm fraction. Gibberellic acid has little or no enhancing effects on the activity of the cytochrome enzymes, but decreases the peroxidase activity.

SEARCH HISTORY

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     (FILE 'HOME' ENTERED AT 12:08:55 ON 19 NOV 2008)

     FILE 'HCAPLUS' ENTERED AT 12:09:04 ON 19 NOV 2008
                E GROSSMANN KLAUS/AU
L1          126 SEA ABB=ON  ("GROSSMANN KLAUS"/AU OR "GROSSMANN KLAUS DIETER"/A
                U OR "GROSSMANN KLAUS U"/AU OR "GROSSMANN KLAUS ULRICH"/AU)
                E SCHIFFER HELMUT/AU
L2           16 SEA ABB=ON  "SCHIFFER HELMUT"/AU
                E WITSCHEL MATTHIAS/AU
L3          120 SEA ABB=ON  ("WITSCHEL M C"/AU OR "WITSCHEL MARGARETE"/AU OR
                "WITSCHEL MATTHIAS"/AU OR "WITSCHEL MATTHIAS C"/AU OR "WITSCHEL
                 MATTHIAS CHRISTIAN"/AU OR "WITSCHEL MATTIAS"/AU)
                E ZAGAR CYRIL/AU
L4          121 SEA ABB=ON  ("ZAGAR C"/AU OR "ZAGAR CYRIL"/AU OR "ZAGAR
                CYRILL"/AU)
                E RENTZEA COSTON/AU
L5          123 SEA ABB=ON  ("RENTZEA COSTIN"/AU OR "RENTZEA COSTIN N"/AU)
                E MENGES MARKUS/AU
L6           45 SEA ABB=ON  "MENGES MARKUS"/AU
L7            2 SEA ABB=ON  L1 AND L2 AND L3 AND L4 AND L5 AND L6
                SELECT RN L7 1

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L8            8 SEA ABB=ON  (133-32-4/BI OR 2591-98-2/BI OR 392-12-1/BI OR
                66082-22-2/BI OR 73-22-3/BI OR 87-51-4/BI OR 9022-98-4/BI OR
                9074-92-4/BI)

     FILE 'HCAPLUS' ENTERED AT 12:10:53 ON 19 NOV 2008
L9            1 SEA ABB=ON  L7 AND L8

     FILE 'REGISTRY' ENTERED AT 12:16:17 ON 19 NOV 2008
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                E EC 2.6.1.27/CN
                E EC 4.1.1.74/CN
                E EC 1.1.1.190/CN
                E EC 1.2.3.7/CN
                E NADH/CN
L10           1 SEA ABB=ON  NADH/CN
                E NADPH/CN
L11           1 SEA ABB=ON  NADPH/CN
L12           5 SEA ABB=ON  (9022-98-4 OR 9074-92-4 OR 58-68-4 OR 53-57-6 OR
                66082-22-2)/RN

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L13           1 SEA ABB=ON  66082-22-2/RN

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L14          16 SEA ABB=ON  L13

     FILE 'REGISTRY' ENTERED AT 12:22:42 ON 19 NOV 2008
L15           1 SEA ABB=ON  53-57-6/RN
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L16       12664 SEA ABB=ON  L15

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L17           1 SEA ABB=ON  58-68-4/RN

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L18       15228 SEA ABB=ON  L17

     FILE 'REGISTRY' ENTERED AT 12:22:43 ON 19 NOV 2008
L19           1 SEA ABB=ON  9074-92-4/RN

     FILE 'HCAPLUS' ENTERED AT 12:22:43 ON 19 NOV 2008
L20          45 SEA ABB=ON  L19
L21       78722 SEA ABB=ON  L14 OR L16 OR L18 OR L20 OR ?TRYPTOPHAN?(W)(?TRANSA
                  MINASE? OR ?AMINOTRANSFERASE?) OR (?INDOLEPYRUVATE? OR
                  ?INDOLE?(W)3(W)?PYRUVATE?)(W)?DECARBOXYLASE? OR NADH OR NADPH
                  OR ?INDOLE?(W)3(W)?ACETALDEHYDE?(W)(?REDUCTASE? OR ?OXIDASE?)
L22         473 SEA ABB=ON  L21 AND (?HERBICID? OR ?PESTICID?)
L23           4 SEA ABB=ON  L22 AND ?GROWTH?(4A)?REGULAT?
L24         374 SEA ABB=ON  L22 AND (PRD<20020325 OR PD<20020325)
L25           1 SEA ABB=ON  L24 AND ?ENZYME?(4A)?BLOCK?
L26          63 SEA ABB=ON  L24 AND ?ENZYME?(4A)(?BLOCK? OR ?ACTIV?)
L27          66 SEA ABB=ON  L23 OR L25 OR L26
L28           3 SEA ABB=ON  L27 AND (?PLANT? OR ?VEGETAT?)(4A)?CONTROL?
L29           9 SEA ABB=ON  L24 AND (?PLANT? OR ?VEGETAT?)(4A)?CONTROL?
L30          13 SEA ABB=ON  L23 OR L25 OR L28 OR L29

     FILE 'AGRICOLA, BIOSIS, CABA, CROPB, CROPU, AND ESBIOBASE'
                  ENTERED AT 12:36:04 ON 19 NOV 2008
L31          72 SEA ABB=ON  L23
L32          66 DUP REMOV L31 (6 DUPLICATES REMOVED)
L33          21 SEA ABB=ON  L32 AND (?ENZYME?(4A)(?BLOCK? OR ?ACTIV?) OR
                  (?PLANT? OR ?VEGETAT?)(4A) ?CONTROL?)

     FILE 'HCAPLUS, CABA, CROPU, ESBIOBASE' ENTERED AT 12:38:56 ON 19 NOV 2008
L34          33 DUP REMOV L30 L33 (1 DUPLICATE REMOVED)
                  SAV L24 BRO837L24/A

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FILE CROPU
FILE LAST UPDATED: 5 JAN 2004       <20040105/UP>
FILE COVERS 1985 TO 2003

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FILE COVERS 1950 TO PATENT PUBLICATION DATE: 13 Nov 2008 (20081113/PD)
FILE LAST UPDATED: 14 Nov 2008 (20081114/ED)
HIGHEST GRANTED PATENT NUMBER: US7451492
HIGHEST APPLICATION PUBLICATION NUMBER: US20080282436
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